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- 1 -

DESCRIPTION

PATTERNING PHASE DIFFERENCE PLATE,
PRODUCTION METHOD FOR PATTERNING PHASE
DIFFERENCE PLATE,
2D/3D SWITCHING TYPE LIQUID CRYSTAL DISPLAY
PANEL, AND
2D/3D SWITCHING TYPE LIQUID CRYSTAL DISPLAY UNIT

TECHNICAL FIELD

The present invention relates to a patterning phase difference plate (for use in a liquid crystal display panel and the like capable of switching between first display and second display) having an alignment mark, a production method for the patterning phase difference plate, a liquid crystal display panel capable of switching between first display (2D display) and second display (3D display), and a liquid crystal display unit.

BACKGROUND ART

In the production process for a liquid crystal display panel and the like, two substrates for sandwiching a liquid crystal layer are produced separately, and then bonded with each other. Usually, an alignment mark is formed on each of the substrates, and the alignment mark

- 1/1 -

is used for alignment in the process of bonding the

are intended to be included within the scope of the following claims.

INDUSTRIAL APPLICABILITY

According to the arrangement or method of the present invention, the alignment mark can be formed without increasing processing steps at such a position as to contact the liquid crystal layer. Therefore, the present invention can be suitably applied to a patterning phase difference plate (for use in a liquid crystal display panel and the like capable of switching between first display and second display) having an alignment mark, and to a production method for the patterning phase difference plate.

According to the arrangement of the present invention, display operation can be performed without fail at an ambient temperature that guarantees operation. Therefore, the present invention is suitably applied to a liquid crystal display panel capable of switching between first display (2D display) and second display (3D display), and to a liquid crystal display unit.

CLAIMS

1. A patterning phase difference plate, comprising:

an alignment film provided on a substrate material, the alignment film having a first alignment region and a second alignment region, the first alignment region and the second alignment region having different alignment directions;

a liquid crystal layer provided on the alignment film; and

an alignment mark for use in bonding the patterning phase difference plate to another member, the alignment mark being a region having an optical function different from an optical function of a region surrounding the alignment mark.

2. The patterning phase difference plate as set forth in claim 1, wherein:

one of the first alignment region and the second alignment region is provided in the region of the alignment mark, and the other of the first alignment region and the second alignment region is provided in the region surrounding the alignment mark.

3. (Amended) A liquid crystal display panel, comprising:

a patterning phase difference plate used as a parallax barrier, the patterning phase difference plate including

an alignment film provided on a substrate material, the alignment film having a first alignment region and a second alignment region, the first alignment region and the second alignment region having different alignment directions;

a liquid crystal layer provided on the alignment film; and

an alignment mark for use in bonding the patterning phase difference plate to another member, the alignment mark being a region having an optical function different from an optical function of a region surrounding the alignment mark.

4. A production method for a patterning phase difference plate including

an alignment film provided on a substrate material, the alignment film having a first alignment region and a second alignment region, the first alignment region and the second alignment region having different alignment directions;

a liquid crystal layer provided on the alignment film; and

time of 3D display; and

a switching liquid crystal panel which switches between 2D display and 3D display by enabling or disabling an effect of the parallax barrier,

one of (a) the display-use liquid crystal panel and (b) the switching liquid crystal panel being provided closer to a light source than the other, a liquid crystal layer in said one of (a) the display-use liquid crystal panel and (b) the switching liquid crystal panel having a transition point higher than that of a liquid crystal layer in the other.

7. (New) A liquid crystal display panel, comprising:

a display-use liquid crystal panel which generates two display images in accordance with image data inputted;

parallax barrier means which separates the two display images into different viewing angles; and

a switching liquid crystal panel which enables or disables an effect of the parallax barrier means,

one of (a) the display-use liquid crystal panel and (b) the switching liquid crystal panel being provided closer to a light source than the other, a liquid crystal layer in said one of (a) the display-use liquid crystal panel and (b) the switching liquid crystal panel having a transition point higher than that of a liquid crystal layer in the other.

8. (New) A liquid crystal display device, comprising:
a liquid crystal display panel including

a display-use liquid crystal panel which generates two display images in accordance with image data inputted;

parallax barrier means which separates the two display images into different viewing angles; and

a switching liquid crystal panel which enables or disables an effect of the parallax barrier means,

one of (a) the display-use liquid crystal panel and (b) the switching liquid crystal panel being provided closer to a light source than the other, a liquid crystal layer in said one of (a) the display-use liquid crystal panel and (b) the switching liquid crystal panel having a transition point higher than that of a liquid crystal layer in the other.